



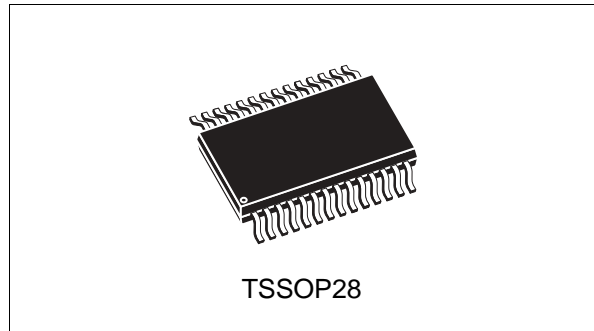
# ST19NP18-TPM

## Trusted Platform Module (TPM)

Data Brief

### Features

- Single-chip Trusted Platform Module (TPM)
- Embedded TPM 1.2 firmware
- TPM driver for BIOS and Windows® 2000/XP
- 33-MHz Low Pin Count (LPC) interface V1.1
- Compliant with TCG PC client specific TPM Implementation Specification (TIS) V1.2
- Dedicated LPC communication buffer for TPM commands handling optimization
- Compliant with Trusted Computing Group (TCG)<sup>(1)</sup> V1.1B / V1.2 specifications
- Architecture based on ST19N Secure Smartcard IC platform:
  - 1088-bit Modular Arithmetic Processor providing full support for Asymmetric operations
  - Hardware-based SHA-1 accelerator enabling BIOS related fast hash operations
  - FIPS 140-2 and AIS-31 compliant True Random Number Generators
  - Active security sensors



- EEPROM-based NVM including 128 Bytes of OTP area for production configuration
  - Highly reliable CMOS EEPROM submicron technology
  - 10 year data retention
  - 500,000 Erase/Write cycle endurance
  - Storage for up to 30 keys
- 5 software-controlled General Purpose I/O (GPIO) pins
- Power-saving mode
- Available in recommended TCG PC client 1.2 compatible TSSOP28 package
- 3.3V ± 10% power supply voltage
- 0 to 70°C operating temperature range

Function	Speed <sup>(1)</sup>
RSA 1024-bit signature with CRT <sup>(2)</sup>	57 ms
RSA 1024-bit signature without CRT <sup>(2)</sup>	189 ms
RSA 1024-bit verification (e='\$10001')	3.7 ms
RSA 1024-bit key generation	1.6 s
RSA 2048-bit signature with CRT <sup>(2)</sup>	382 ms
RSA 2048-bit verification (e='\$10001')	60 ms

1. Typical values, independent of external clock frequency and supply voltage.

2. CRT: Chinese Remainder Theorem.

1. TCG website: <http://www.trustedcomputinggroup.org>

# 1 General description

The ST19NP18-TPM is a cost-effective Trusted Platform Module (TPM) solution. The ST19NP18-TPM is designed to provide PC platforms with enhanced security and integrity mechanisms as defined by Trusted Computing Group standards. The product provides full support of TCG v1.2 specifications.

ST19NP18-TPM is based on the ST19NP18 silicon product.

The ST19NP18 is driven from the Smartcard IC ST19N platform. It is manufactured using the advanced highly reliable STMicroelectronics CMOS EEPROM technology.

The ST19NP18 has an 8-bit CPU architecture and includes the following on-chip memories: User ROM, User RAM and EEPROM with state of the art security features. ROM, RAM and EEPROM memories can be configured into partitions with customized access rules.

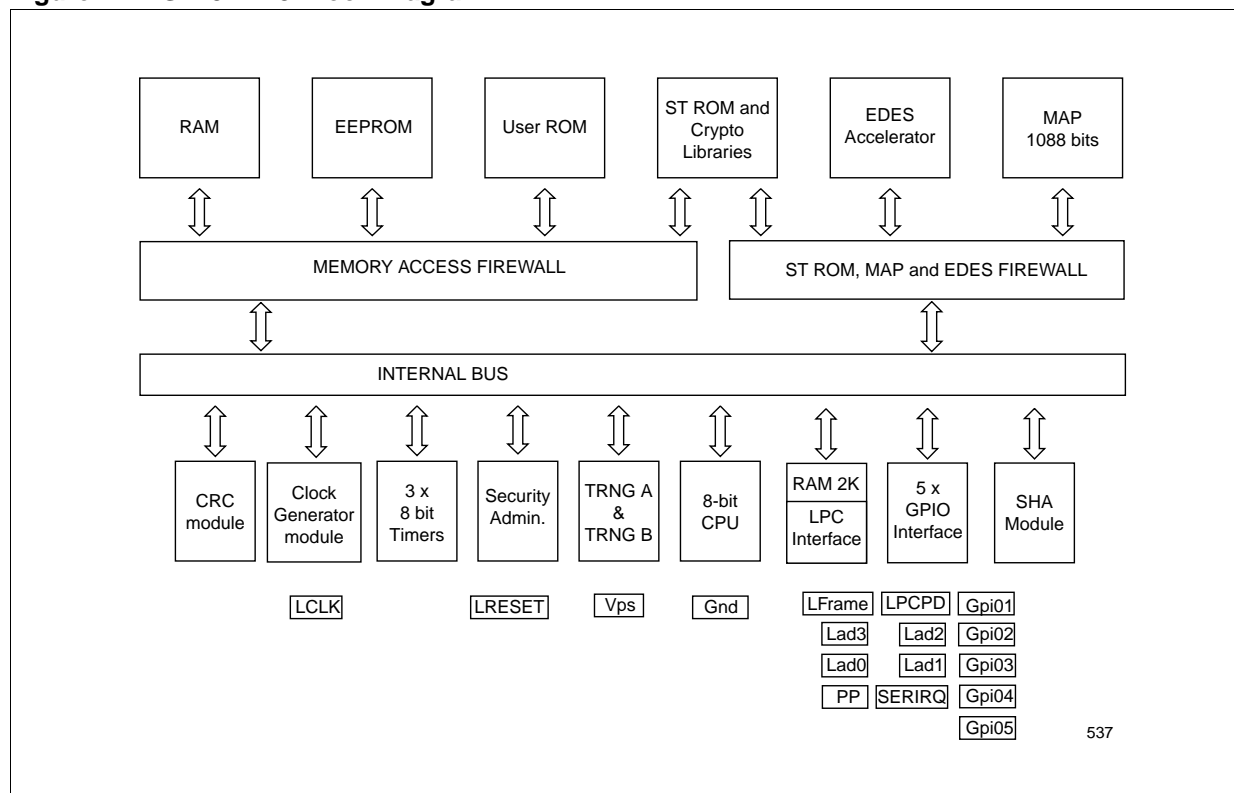
The ST19NP18 also includes a Modular Arithmetic Processor (MAP). The 1088-bit architecture of this cryptographic engine allows processing of modular multiplication, squaring and additional calculations up to 2176 bit operands.

The Modular Arithmetic Processor (MAP) is designed to speed up cryptographic calculations using Public Key Algorithms.

The Secure Hash Accelerator allows fast SHA-1 computation especially well suited for BIOS hash operations during early boot stages.

The ST19NP18 is specially designed in line with TCG PC Client Specific TPM Implementation Specification (TIS) referring to Intel's LPC Specification revision 1.1.

**Figure 1. ST19NP18 Block Diagram**



## 2 Software description

### 2.1 Embedded TCG TPM firmware

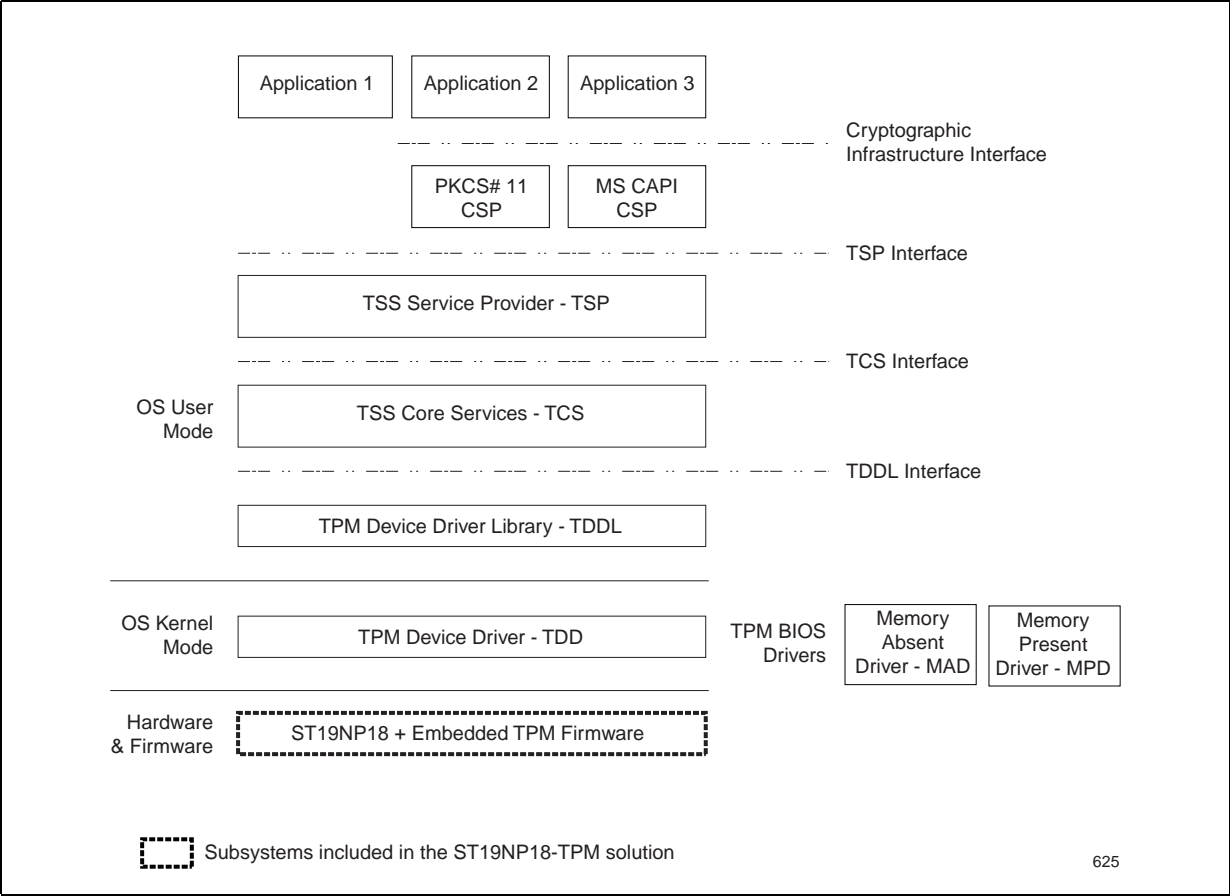
The ST19NP18 includes TPM firmware compatible with TPM V1.2 specifications.

This firmware supports features such as Cryptographic Key Generation, Integrity Metrics and Secure Storage, as well as Locality, Delegation and Transport Session functions.

This TCG TPM firmware uses an optimized and flexible software architecture that easily integrates Trusted Computing Framework enhancements or dedicated functions.

The ST19NP18-TPM provides OEMs with TPM solution for their PC platforms.

Figure 2. Software layers



### 3 Revision history

**Table 1. Document revision history**

Date	Revision	Changes
5-Oct-2006	1	Initial release.

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